

Remarks

The Applicants note with appreciation the withdrawal of objections set forth in paragraphs 2-5 of the Official Action.

Rejection Based on 35 U.S.C. §112

The Applicants acknowledge the rejection of Claims 4 and 8 under 35 U.S.C. §112, second paragraph, relating to the terms "residual entanglements" and "entanglements". The term "residual" has been removed from Claim 4. Entanglements are well known structures in yarns that provide cohesion between the individual filaments. When a yarn is produced, the individual filaments are entangled, meaning that they are intermingled, by an entangling or intermingling unit. Such an entangling unit is shown as element 11 in Figure 2 and described on page 18 of the specification. Entanglement is also similar to interlacing. Entangling or intermingling units are well known in the art, as evidenced by the reference to them in Fastenau at column 5, lines 13-16. In addition, the application discusses entanglements in the first full paragraph of page 15, and describes a method of measuring the number of entanglements in the first full paragraph of page 24. In light of the well known meaning of entanglements in the art and the detailed description in the application, one skilled in the art would understand the meaning of the claim elements in question. Therefore, withdrawal of the rejection of Claims 4 and 8 based on §112 is respectfully requested.

Rejection Based on Fastenau

The Applicants acknowledge the rejection of Claims 1 – 3, 5 and 6 under 35 U.S.C. §103 over Fastenau. The fibers of Fastenau are diamond-shaped in cross section and are in no way similar to those of the invention such as on page 15, last paragraph, of the application. The figures of Fastenau and the corresponding written description, for example, at column 3, line 23,

clearly indicate that Fastenau is directed to conventional diamond-shaped filaments. In fact, at column 5, lines 29-55, Fastenau describes the importance of the diamond shape. According to Fastenau, the diamond shape allows the filaments to orient themselves such that the oblique cross-sectional ends of filaments in a first row are near the acute cross-sectional ends of adjacent rows. Fastenau indicates that the diamond shape thereby provides a more dense arrangement of the filaments in a yarn and enhanced "covering power". Thus, Fastenau teaches away from a base fabric as claimed. When taken as a whole, Fastenau does not describe or fairly suggest filaments having flattened cross sections of substantially constant thickness, and certainly does not suggest a base fabric formed from such filaments and having the combination of properties recited in Claim 1. The Applicants have amended Claim 1 so that the invention will not be confused with Fastenau. The shape is that of a cross section of monofilaments selected from the group consisting of a flattened cross section of constant thickness, a flattened cross section of constant thickness having grooves, and combination thereof. Moreover, there is nothing in Fastenau that would lead one of ordinary skill in the art to make modifications that would fall within the Applicants' definition, and there is nothing that would lead one of ordinary skill in the art to have an expectation that such modifications would or could provide any benefit. The Applicants accordingly respectfully submit that Claims 1-3, 5 and 6 are patentable over Fastenau. Reconsideration and withdrawal of the §103 rejection is respectfully requested.

Rejection based on JP '740

The Applicants acknowledge the rejection of Claims 1-3, 5-7, 9 and 10 under 35 U.S.C. §103 over JP '740. The Applicants were, of course, well aware of JP '740, as exemplified by the discussion of that publication on page 3 of their Specification. The Applicants made it clear in that discussion that JP '740 is inapplicable because the air permeation through the base fabric of

JP '740 is not lower than 0.3 cc/cm²/sec under low pressure (124 Pa), and does not satisfy lower air permeation requirements recently established in the art.

The Applicants agree that JP '740 fails to teach the cover factor recited in Claim 1 and teaches a different level of air permeability from that claimed. However, the Official Action alleges that it would have been obvious to modify the JP '740 base fabric to exhibit the claimed cover factor. Further, the Official Action indicates that, once modified, the claimed air permeability would be inherent to the JP '740 base fabric. The Applicants respectfully disagree with both of these points, and address each in turn.

With respect the obviousness portion of the rejection, it is the position in the Office Action that because air permeability is related to the cover factor and weave structure, and because air bag fabric should exhibit a small range of air permeability, it would have been obvious at the time the invention was made to modify the cover factor of the JP '740 base fabric. It is respectfully submitted that air permeability depends on several factors, of which the cover factor is only one. Modification or optimization of any of these contributing factors, some of which are discussed below, would change the air permeability of the JP '740 base fabric. As such, without evidence of record of a specific suggestion or teaching that would lead one of skill in the art to specifically modify the cover factor, as opposed to any of the other contributing factors, such a modification would not have been obvious.

The number of entanglements in the warp effects the air permeability of the fabric, as explained in the application on page 15, first full paragraph. If the number of entanglements in the warp yarns drawn out of the base fabric is greater than 10 per meter, the horizontal index tends to decrease and air permeability through the fabric increases. (The combination of a limited

number of entanglements, the cover factor range and air permeability limits, along with the other elements of Claim 1, is established in Claim 4.)

The residual oil content also effects the air permeability of the fabric. As explained in the second full paragraph of page 15, a residual oil content of less than 0.1 percent by weight plays a role in keeping the air permeability low. If the residual oil content is increased beyond the claimed range, friction between the individual filaments will decrease and air permeability of the fabric will increase. (The residual oil content is explicitly set forth in dependent Claim 5.)

The degree of surface smoothness of the monofilaments also contributes to the air permeability of the fabric. As described on page 16, first full paragraph, ff., surface smoothness is indicated by the ratio of the length, c, of the smallest minor axis to the length, b, of the largest minor axis. If the ratio c/b is low, frictional force of the monofilaments will be decreased and air permeability through the fabric will be increased. Therefore, air permeability through the fabric can also be lowered by establishing a high surface smoothness (at least 0.8 as recited in Claim 7).

It is noteworthy that the cover factor is independent of the several other factors that contribute to air permeability. As explained on page 12 of the specification, the cover factor is represented by the equation $(D1 \times 0.9)^{1/2} \times N1 + (D2 \times 0.9)^{1/2} \times N2$, where D1 and D2 are the total fineness of the warp and weft, respectively, and N1 and N2 are the texture densities of the warp and weft, respectively. Thus, the cover factor is independent of the other contributing factors.

Because the air permeability of the base fabric is dependent upon several independent factors, any one of those factors could be optimized to decrease air permeability, and it would not have been obvious to modify the cover factor of the JP '740 base fabric to arrive at the claimed invention absent some specific suggestion to do so. Instead, one of skill in the art, even if properly motivated to reduce the air permeability described in JP '740, would be required to do

so by experimentally adjusting many different and independent factors that contribute to the overall permeability. Put simply, modifying the cover factor to arrive at the range recited in Claim 1 would not have been obvious at the time the invention was made.

However, even if it were obvious to modify the cover factor of JP '740, the modified fabric of JP '740 would not inherently have the claimed air permeability. In essence, the Official Action argues that the prior art would inherently exhibit the claimed air permeability if the cover factor of JP '740 were optimized. This is exactly the type of rejection that was stricken down by the Federal Circuit in *In re Rijckaert*, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). See, MPEP § 2112, (characterizing *Rijckaert* as having "reversed [a] rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art").

It is well settled that when a reference is silent as to a claim element, the element can be deemed inherent only if it is necessarily present in the reference, MPEP § 2112. The fact that a certain condition may be present in the prior art is insufficient to establish inherency. *In re Oelrich*, 212 USPQ 323, 326 (CCPA 1981). Even if one were to modify the cover factor of JP '740 to fall within the claimed range of 1700 and 2200 (which, it is worth repeating, there is no suggestion in the art to do), one would not necessarily produce a fabric having the claimed air permeability under low pressure of at most 0.1 cc/cm²/sec, and under high pressure of at most 20 cc/cm²/sec, as set forth in Claim 1. Instead, to achieve the claimed air permeability, one would also be required to adjust the values of the other contributing factors, including the number of entanglements, residual oil content, and the degree of surface smoothness of the monofilaments, as taught in the Applicants' specification. If any of these factors is not appropriately adjusted, the air permeability of the hypothetically modified JP '740 fabric may not fall within the claimed

range. (See, specification at pages 15-16.) Thus, the claimed air permeability would not necessarily be present in the base fabric of JP '740, even if it were modified as suggested in the Official Action.

The Applicants also respectfully submit that JP '740 utterly fails to teach or suggest the Applicants' claimed monofilament cross section selected from the group consisting of a flattened cross section of constant thickness, flattened cross section of constant thickness having grooves, and a combination thereof. Careful scrutiny of the entire JP '740 document reveals that there simply is no disclosure in that regard. As a consequence, the Applicants respectfully submit that the solicited claims are allowable over JP '740 on that basis alone.

Similarly, Claim 7 is directed to yarns for air bags having a combination of clear and specifically defined characteristics. Like those elements of Claim 1, several of the characteristics independently contribute to the overall properties of the yarn, including the cover factor and air permeability of a fabric made therefrom. As explained in response to the previous Official Action, JP '740 fails to teach or suggest the recited combination. For reasons similar to those set forth above, it would not have been obvious to modify JP '740 to arrive at the claimed combination.

Reconsideration and withdrawal of the §103 rejection of Claims 1-3, 5-7, 9 and 10 based on the alleged obvious and/or inherent properties of JP '740 is, therefore, requested.


Rejection Based on Aneja

The Applicants acknowledge the rejection of Claims 7 and 9 under §103 over Aneja. Claim 7 has been amended to make more clear that the monofilaments have a flattened cross-section of constant thickness, a flattened cross section of constant thickness having grooves or a combination thereof. Aneja discloses fibers having a scalloped-oval cross section. The Aneja

cross section includes a pair of bulges designated as b_1 and b_2 , where the ratio of b_1/b_2 is from 0.25 to 0.9. There is no description or suggestion to provide more than two circular bulges of substantially the same radius, i.e., constant thickness. Thus, the claim is distinguishable from the Aneja fibers. In fact, the hypothetical provision of more than two circular bulges having a constant thickness would defeat the purpose of Aneja, i.e., would destroy the scalloped-oval cross section sought by Aneja. There are no teachings or suggestions in Aneja, the other reference of record or within the knowledge of one skilled in the art that would lead the skilled artisan to modify the scalloped-oval cross section filaments of Aneja to arrive at the claimed yarns. Therefore, withdrawal of the §103 rejection of Claims 7 and 9 based on Aneja is respectfully requested.

In light of the foregoing, the Applicants respectfully submit that the entire Application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,


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